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| APPLICATION NO.                     | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-------------------------------------|-------------|----------------------|---------------------|------------------|
| 09/973,810                          | 10/10/2001  | Adarsh Gupta         | CHA920010011US1     | 7829             |
| 23550                               | 7590        | 04/21/2004           | EXAMINER            |                  |
| HOFFMAN WARNICK & D'ALESSANDRO, LLC |             |                      | LU, KUEN S          |                  |
| 3 E-COMM SQUARE                     |             |                      | ART UNIT            |                  |
| ALBANY, NY 12207                    |             |                      | PAPER NUMBER        |                  |

2177

DATE MAILED: 04/21/2004

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/973,810

Applicant(s)

GUPTA ET AL.

Examiner

Kuen S Lu

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 10 October 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-50 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-50 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 10-10-01/2.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Abstract*

Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

1. The abstract of the disclosure is objected to because it contains phrase "invention allows" which can be implied. Correction is required. See MPEP § 608.01(b).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 6, 8, 10-16, 19, 21, 23-25, 27-32, 35-38, 40-43 and 46-49 are rejected under 35 U.S.C. 102(b) as anticipated by OraRep (Oracle7 Sever Distributed Systems, Vol. II: Replicated Data, Release 7.3, February, 1996, Oracle Corporation, hereafter "OraRep").

As per Claims 1, 13, 27, 40 and 41, OraRep teaches the following:

"migrating a database from a first server to a second server while continuing to provide transaction service" at Page 2-4, Paragraph "Replicated Data" where synchronous replication provides multiple copies of the same data at different sites available to users;

"providing transaction service on the first server" at Page 4-33, Paragraph "Propagation Method" and Figure 4-4 by showing a three sites replication system where site A serving as the first site for providing transaction service;

"establishing a database copy on the second server" at Page 4-33 where Figure 4-4 shows site B having database copy maintaining synchronously with the database at master definition site A;

"logging at least one transaction from the first server to create a transaction log" at Page 1-13 where one transaction at the source database is stored in a deferred transaction queue;

"executing the at least one logged transaction on the second server" at Page 1-13 where the deferred transaction at source database is queued, propagated to and applied to the destination database;

"queuing at least one transaction request" at Page 4-28, Figure 4-3 where request of transaction, database replication execution at the remote site, is always queued before being propagated to the destination site;

"executing the at least one queued transaction request on the second server" at Pages 4-33 and 4-44, Figs. 4-4 and 4-5 where the three sites replicate each other synchronously or asynchronously, and each site queues requests and execute the request of deferred propagation to other sites; and

“providing transaction service on the second server” at Pages 4-33 and 4-44, Figs. 4-4 and 4-5 where the three replication participating sites are available to users.

As per Claim 2, OraRep teaches “providing transaction service on the first server ceases prior to the step of queuing at least one transaction request” at Page 10-8 where the jobs queued are executed periodically. Once all jobs executed, the execution will be suspended until next scheduled time arrives. Furthermore, the job queue locks is used to ensure a job is executed only one session at a time. Before acquiring a job queue lock for running the job, the execution of the job is locked.

As per Claim 3, OraRep teaches “the step of repeating the steps of logging at least one transaction and executing the at least one logged transaction on the second server prior to the step of queuing” at Page 4-34 and 10-8 where the jobs queued are executed periodically. Once a job execution starts, new jobs will be queued but will not be executed until the next scheduled time arrives. The replicated site B is the site for the second server. Furthermore, the job queue locks is used to ensure a job is executed only one session at a time. Before acquiring a job queue lock for running the job, the execution of the job is locked.

As per Claims 6 and 19, OraRep teaches “the step of establishing a database copy on the second server includes transmitting of a database backup from the first server over a network” at Pages 1-15 and 7-6 by teaching creating backups of symmetric replication databases over a network architecture.

As per Claims 8 and 21, OraRep teaches "the step of transmitting the transaction log to the second server over a network" at Page 1-15 where database change at the source site is queued and transferred to the destination site.

As per Claim 10, OraRep teaches "queuing takes place at the first server" at Pages 4-9 and 4-33, Paragraph "Asynchronous Propagation" where deferred transaction is queued at the replication participation site A.

As per Claim 11, OraRep teaches "queuing takes place at the second server" at Pages 4-9 and 4-33, Paragraph "Asynchronous Propagation" where deferred transaction is queued at the replication participation site B.

As per Claim 12, OraRep teaches "transmitting an application from the first server to the second server" at Pages 4-35 to 4-38 where DDL changes are replicated among master sites.

As per Claims 14 and 28, OraRep teaches "the server that accesses the source and the server that accesses the target are the same server at Page 4-33 and Fig. 4-5 where the server at site C is the server accessing the source site A and destination site B.

As per Claims 15 and 29, OraRep teaches "the server that accesses the source and the source are discrete" at Page 4-33 and Fig. 4-5 where the server at site C is the server accessing the source site A and the servers at sites A and C are discrete.

As per Claims 16 and 30, OraRep teaches "the server that accesses the target and the target are discrete" at Page 4-33 and Fig. 4-5 where the server at site C is the server accessing the target site B and the servers at sites A and B are discrete.

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at Pages 4-9 and 4-33, Paragraph "Asynchronous Propagation" where deferred transaction is queued at the replication participation site A.

As per Claim 23, OraRep teaches "queuing takes place at the server that accesses the source" at Pages 4-9 and 4-33, Paragraph "Asynchronous Propagation" where queuing takes place at the server pf Site C access the source site A.

As per Claim 24, OraRep teaches "queuing takes place at the server that accesses the target" at Pages 4-9 and 4-33, Paragraph "Asynchronous Propagation" where queuing takes place at the server pf Site C access the target site B.

As per Claim 25, OraRep teaches "at least one of the server is connected to a network" at Page 1-15 by teaching symmetric replication databases over a network architecture.

As per Claims 31 and 42, OraRep teaches the following:

"a copy module that establishes a database copy on the second server" at Page 4-33 where Figure 4-4 shows site B having database copy maintaining synchronously with the database at master definition site A;

"logging at least one transaction from the first server received since any immediately preceding synchronization to create a transaction log" at Page 1-13 where one transaction at the source database is stored in a deferred transaction queue;

"executing the at least one logged transaction on the second server" at Page 1-13 where the deferred transaction at source database is queued, propagated to and applied to the destination database;

"queues at least one transaction request" at Page 4-28, Figure 4-3 where request of transaction, database replication execution at the remote site, is always queued before being propagated to the destination site; and

"executes the at least one queued transaction request on the second server" at Pages 4-33 and 4-44, Figs. 4-4 and 4-5 where the three sites replicate each other synchronously or asynchronously, and each site queues requests and execute the request of deferred propagation to other sites.

As per Claims 32 and 43, OraRep teaches "establishes the database copy by transmitting a backup of the database over a network to the second server" at Pages 1-15 and 7-6 by teaching creating backups of symmetric replication databases over a network architecture and at Page 4-33 where Figure 4-4 shows site B having database copy maintaining synchronously with the database at master definition site A.

As per Claims 35 and 46, OraRep teaches "the updating module transmits the transaction log to the second server over a network" at Pages 1-15 where database change at the source site is queued and transferred to the destination site.

As per Claims 36 and 47, OraRep teaches "the transition module queues the at least one transaction request at the first server" at Pages 4-9 and 4-33, Paragraph "Asynchronous Propagation" where deferred transaction is queued at the replication participation site A.

As per Claims 37 and 48, OraRep teaches "the transition module queues the at least one transaction request at the second server" at Pages 4-9 and 4-33, Paragraph



"Asynchronous Propagation" where deferred transaction is queued at the replication participation site B.

As per Claims 38 and 49, OraRep teaches "the transition module is activated after a time duration that the updating module is activated reaches a set point" at Page 12-18 where the interval is the set point in time duration for database system to initiate the execution of deferred transaction at the remote replication site.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 4-5, 17-18, 33-34, 39, 44-45 and 50 are rejected under 35 U.S.C. 103(a) as

being unpatentable over OraRep (Oracle7 Sever Distributed Systems, Vol. II:

Replicated Data, Release 7.3, February, 1996, Oracle Corporation, hereafter "OraRep"),

as applied to Claims 1-3, 6, 8, 10-16, 19, 21, 23-25, 27-32, 35-38, 40-43 and 46-49, and

in view of Pal et al. (U.S. Patent 6,598,079, hereafter "Pal").

As per Claims 4, 17, 33 and 44, OraRep teaches using interval to schedule the execution of queued remote procedure call at Page 4-30.

OraRep does not specifically teach "a time duration of each repeating step is shorter than a preceding repeating step".

However, Pal teaches decreasing or increasing the time interval when a process is invoked next by calculating the number of objects involved in the process increases or decreases, respectively at col. 6, lines 7-21.

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention was made to combine Pal's reference with OraRep's by fluctuating intervals between executions of queued deferred remote procedure calls such that the number of jobs queued would have been decreased steadily to an optimal level because both references are directed to performance improvement of computer systems and the completion of jobs in the time interval will directly affect the system performance.

As per Claims 5, 18, 34 and 45, Pal further teaches "a number of logged transactions executed during each repeating step is smaller than a preceding repeating step" by decreasing or increasing the time interval when a process is invoked next by calculating the number of objects involved in the process increases or decreases, respectively at col. 6, lines 7-21.

As per Claims 39 and 50, OraRep teaches "the transition module is activated" at Page 12-18 where the interval is the set point in time duration for database system to initiate the execution of deferred transaction at the remote replication site.

OraRep does not specifically teach activating the transition module "after a number of logged transactions reaches a set point".

However, Pal teaches setting a maximum number of objects designated in a memory partition such that the time interval of a process to be invoked will be decreased when the maximum number is reached.

It would have been obvious to one having ordinary skill in the art at the time of the applicant's invention was made to combine Pal's reference with OraRep's by setting and using a maximum number of deferred transactions queued such that deferred remote procedure call would have been invoked when the maximum number is reached, instead of when a fixed time interval reached, because by doing so the data replication between definition and master sites would have been more flexible and efficient.

4. Claims 7, 9, 20, 22 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over OraRep (Oracle7 Sever Distributed Systems, Vol. II: Replicated Data, Release 7.3, February, 1996, Oracle Corporation, hereafter "OraRep"), as applied to Claims 1-3, 6, 8, 10-16, 19, 21, 23-25, 27-32, 35-38, 40-43 and 46-49, and in view of OraAdm (Oracle8i Administrator's Reference, Release 3 for Sun SPARC Solaris, August 2000, ORACLE CORPORATION).

As per Claims 7 and 20, OraRep teaches making database backup copy through a network as described in Item 1.

OraRep does not specifically teach "the network is the Internet".

However, OraAdm teaches the implementation of LDAP where Oracle Internet Directory is installed at Page 4-2.

It would have been obvious to one having ordinary skill in the art at the time of the

applicant's invention was made to combine Pal's reference with OraRep's by implementing LDAP because by doing so the benefits of internet is available.

As per Claims 9, 22 and 26, OraAdm further teaches "network is internet" at Page 4-2 by LDAP implementation.

### ***Conclusions***

5. The prior art made of record

A. U.S. Patent 6,598,079

U. Oracle7 Sever Distributed Systems, Vol. II: Replicated Data, Release 7.3,  
February, 1996, Oracle Corporation

V. Oracle8i Administrator's Reference, Release 3 for Sun SPARC Solaris,  
August 2000, Oracle Corporation

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

B. U.S. Publication 2003/0220935

C. U.S. Patent 6,304,882

D. U.S. Patent 5,796,999

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kuen S Lu whose telephone number is 703-305-4894. The examiner can normally be reached on 8 AM to 5 PM, Monday through Friday. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Breene can be reached on 703-305-9790. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

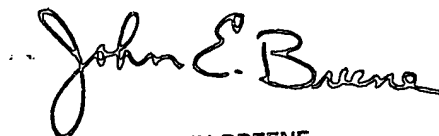
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

Kuen S. Lu

Patent Examiner

April 10, 2004

A handwritten signature in black ink, reading "John E. Breene". The signature is fluid and cursive, with the first name "John" being the most prominent.

JOHN BREENE  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100